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To: Holden, Candace R. (MSFC-VP61)
Cc: Smoot, James L. (MSFC-VP61); Koczor, Ronald J. (MSFC-VP61)
Subject: Abstract submitted
To Goldschmidt Conference, July 13 - 18 in Vancouver, Canada

This is a geochemistry meeting. I will not be going. The senior author will.

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Abstract

As part of a collaborative agreement between the U.S. Geological Survey (USGS) and NASA's Marshall Space Flight Center (MSFC) lunar highland simulants are being produced to support engineers and scientists in developing the technologies required to put a base on the moon by 2024. Two simulants have been produced to date: NU-LHT-1M and -2M (NASA/USGS-Lunar Highlands Type-1&2 Medium-grained). Using starting material chiefly collected from the Stillwater Mine, Nye, MT, blending protocols were developed based on normative mineralogy calculated from average chemistry for the Apollo 16 regolith. New technologies using a high temperature remotely coupled plasma melter were developed to generate both high quality and agglutinitic glasses that simulate the glassy components of the regolith. Detailed chemical, mineralogical and physical properties analysis of NU-LHT-1M indicate that it is overall a good surrogate for highlands lunar regolith (our new simulant LHT-2M has not been analyzed yet). The primary difference between 1M and 2M was the inclusion of trace mineralogy (phosphates and sulfide). Plans will also be presented on the future direction of the simulant project.

Table 1 - Mineral composition LHT-1M

<u>Mineral</u>	<u>% of total</u>
Olivine	2.7
Altered Ol	0.5
Cpx	2.1
Opx	4.0
Plagioclase	31.6
Ilmenite	0.4
Chromite	0.1
Glass	16.0
Agglutinates	40.9
Other	1.7

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